Quercetin and Blood Oxidative Stress During Ultra-Marathon Running

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Abstract

Previous research indicates that prolonged exercise bouts result in blood oxidative stress. We investigated the efficacy of oral quercetin supplementation, a compound with known antioxidant properties, as a potential countermeasure against blood oxidative stress during ultra-marathon exercise. In a double-blind fashion, 63 subjects received either oral quercetin (250 mg, 4x/day; 1000 mg/day total) or placebo 1-weeks prior to and during the Western States 100 mile trail run. Blood drawn before and immediately following (quercetin finishers n=19, placebo finishers n=21) the event was analyzed for markers of oxidative stress. Results show that in response to the ultra-marathon challenge, aqueous phase antioxidant capacity (ferric reducing ability of plasma, FRAP) was similarly elevated in runners from both quercetin and placebo treatments and likely reflects significant increases in plasma acute levels. Alternately, trolox equivalent antioxidant capacity (TEAC) was not altered by exercise. Quercetin supplementation did not significantly influence pre-to-post-exercise TEAC levels based on a significance level of p<0.05. These findings indicate that oral quercetin supplementation does not appear to alter the lipid or aqueous phase antioxidant capacity of the blood plasma. Accordingly, quercetin supplementation would not be expected to prevent blood oxidative damage during an ultra-marathon event.

Intro

• Previously, blood oxidative stress has been observed following ultra-marathon running.
• Ongoing research efforts seek efficacious antioxidant counter therapies for activity-related ox-stress.
• Quercetin, a polyphenolic compound of grapes, is a beneficial intervention in other exercise models.
• The purpose of this study was to investigate the efficacy of quercetin as a potential countermeasure to oxidative stress during ultra-marathon running.

Methods

• Oral quercetin supplementation would not be expected to prevent blood oxidative damage during ultra-marathon running.